

PATENT ABSTRACTS OF JAPAN

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(71)Applicant : SANYO ELECTRIC CO LTD

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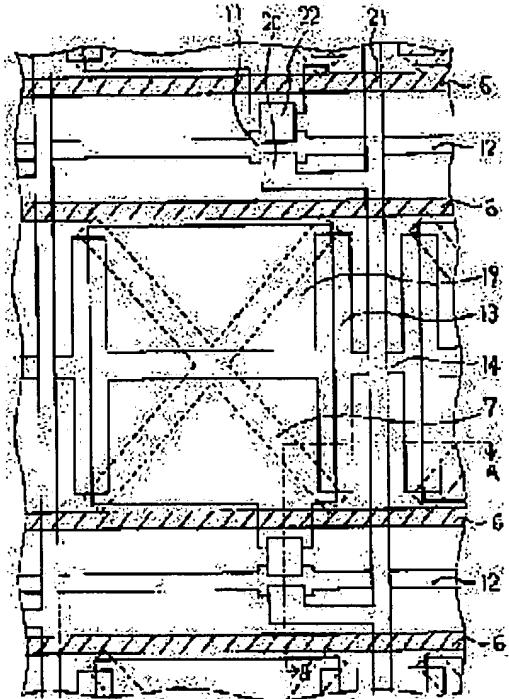
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(54) LIQUID CRYSTAL DISPLAY DEVICE

(57)Abstract:

PURPOSE: To prevent the display screen of the liquid crystal display device of vertical orientation ECB mode from becoming rough owing to the appearance of disclination by controlling the orientation direction of liquid crystal molecules.

CONSTITUTION: Orientation control electrodes 6 are provided outside and above two opposite sides of a display electrode 19 and applied with a voltage different from the display electrode 19, an auxiliary capacity electrode 13 is formed while partially positioned outside and below other two opposite sides of the display electrode 19, and an orientation control window 7 as a part where no electrode is present is formed on a counter display electrode to control the electric field of a liquid crystal layer, thereby prescribing the inclination direction of the liquid crystal molecules.



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[Designation of Numerals]

- 1: first polarizer
- 2: TFT substrate
- 3: liquid crystal layer
- 4: opposing substrate
- 5: second polarizer
- 6: alignment control electrode
- 7: alignment control window
- 10: glass substrate
- 11: gate electrode
- 12: gate line
- 13: storage capacitor electrode
- 14: storage capacitor line
- 15: gate insulating film
- 16: a-Si layer
- 17: semiconductor protective film
- 18: N+a-Si layer
- 19: pixel electrode
- 20: drain electrode
- 21: drain line
- 22: source electrode
- 23: substrate protective film
- 24: first vertical alignment film
- 25: opposing glass substrate
- 26: light blocking film
- 27: opposing pixel electrode
- 28: second vertical alignment film

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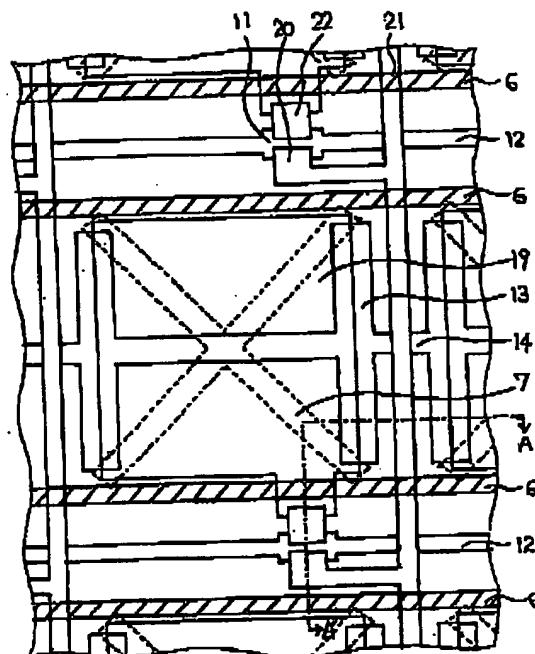
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(22)出願日 平成5年(1993)6月28日	(72)発明者 小間 順夫 大阪府守口市京阪本通2丁目18番地 三洋 電機株式会社内
	(74)代理人 弁理士 西野 卓嗣

(54)【発明の名称】 液晶表示装置

(57)【要約】

【目的】 垂直配向 ECB モードの液晶表示装置において、液晶分子の配向方向を制御することにより、ディスクリネーションの出現による、表示画面のざらつきを防止する。

【構成】 表示電極 (19) の対向する 2 辺の外側上部に配向制御電極 (6) を設け、表示電極 (19) と異なる電圧を印加し、また、一部が表示電極 (19) の別の対向する 2 辺の外側下部にくるよう、補助容量電極 (13) を形成して、更に、対向表示電極 (27') に、電極が存在しない部分である、配向制御窓 (7) を形成することによって、液晶層 (3) の境界を制御し、液晶分子の傾斜方向を規定する。



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